by trypsin-sensitivity also from Mo3 (same ref.) which detects a differentiation antigen fully expressed after 24 h. MAX.1 and MAX.3 showed the same molecular weight (64 KD versus 68KD) under both reducing and non-reducing conditions. MAX.2 has a m.w. of 200 KD. One of the 10 mAbs (MAX.26) that is now under detailed investigation stained matured macrophages and a subpopulation of human T cells. In summary, mAbs of the MAX series seem to be useful reagents for the investigation of human monocyte/macrophage differentiation.

110

DIFFERENCES IN FUNCTIONAL, PHENOTYPICAL AND PHYSICAL PROPERTIES OF HUMAN PERIPHERAL BLOOD MONOCYTES (Mo) REFLECT THEIR VARIOUS MATURATION STAGES. Carl Figdor, Anje te Velde, Jack Leemans, Jan Klomp, Karin Ham, Willy Bont. Division of Immunology, The Netherlands Cancer Institute, Plesmanlaan 121, 1066 CX Amsterdam, The Netherlands

It is not clear whether human Mo heterogeneity must be ascribed to different maturation stages, to stable subpopulations, or is caused by activation of the cells during isolation. Subtle separation procedures (including centrifugal elutriation) were used to prevent activation and to isolate three different Mo subsets. They were equally sized but differed in cellular density which correlated with differences in enzyme and protein content. The Mo subsets expressed different numbers of HLA-DR and Mo differentiation antigens on their membrane, but expressed equal amounts of HLA-DC. IL-1 was primarily synthesized by the less dense Mo, whereas the high density Mo were the major producers of oxidative metabolites as measured by chemiluminescence (CL). The less dense Mo were not susceptible for activated signals provided by LPS and/or IFN-γ. In contrast, incubation of the high density Mo in the presence of IFN-γ induced the expression of HLA-DR but not HLA-DC. In addition, a high dose of LPS (1 μg/ml) or a low dose of LPS (20 ng/ml) and IFN-γ, but not IFN-γ or a low dose of LPS alone, enhanced the CL response of these Mo. Both the functional and phenotypical differences between the Mo subsets were lost after a culture period of 7 days. These results indicate that the Mo subsets represent different maturation stages, where the less dense Mo represent the immature cells and the high density Mo represent mature Mo. Furthermore, Mo must reach a certain stage of development to become susceptible for signals that can activate the cells.

111

CHARACTERIZATION OF IMMUNOGLOBULIN G FCγ RECEPTOR FUNCTION ON SHEEP ALVEOLAR MACROPHAGES. H.B. FLEIT, R.A. WEISS, A.D. CHANANA AND D.D. JOEL. SUNY Stony Brook, Stony Brook, NY 11794 and Brookhaven National Laboratory, Upton, NY 11973.

Receptors for immunoglobulin G (FcY R) are present on monocytes, macrophages, polymorphonuclear leukocytes (PMN) and some lymphocytes. While these receptors have been studied extensively on murine and human leukocytes where functional and antigenic heterogeneity has been observed, the expression of these receptors on ruminant phagocytes has not been studied quantitatively. The sheep is a useful large animal model in which to study host defense against inhaled microorganisms or pollutants. We examined the binding to sheep alveolar macrophages of sheep immunoglobulin G subclasses or rabbit IgG immune complexes formed between rabbit anti-DNP IgG and DNP-bovine serum albumin (DNP-BSA). Alveolar macrophages were obtained by bronchoalveolar lavage, washed and enriched by adherence to plastic. Binding studies using ^{125}I rabbit anti-DNP IgG demonstrated $7.6 \pm 2.8 \times 10^4$ receptors per alveolar macrophage; these receptors bound complexes with an affinity (K_a) = $3.3 \times 10^{-7} M^{-1}$. Saturation binding was achieved at 6×10^{-8} M IgG and by 90 min at 4°C. Binding of subclasses of sheep IgG to alveolar macrophages was examined by immunofluorescence. Functional heterogeneity was noted between alveolar macrophages and blood PMN. Only 10% of alveolar macrophages bound monomeric IgG1; binding of monomeric IgG2 could not be demonstrated. In contrast, most peripheral blood PMN (75-90%) bound IgG2, but not IgG1. These studies demonstrate that sheep alveolar macrophages bind model soluble immune complexes and that their FcγR are functionally and quantitatively similar to macrophages from other species. (NIH CA-38055, 5-T32-ES-07088, DOE DE-AC02- 76CH00016).